Health Care-Associated Infection Prevention Program Annual Health Care-Associated Infections Report 2023

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TABLE OF CONTENTS

GLOSSARY

ACH: Acute care hospital

CAD: Cumulative attributable difference

CAUTI: Catheter-associated urinary tract infection

CDC: Centers for Disease Control and Prevention

CDI: *Clostridioides difficile* infection

CLABSI: Central line-associated bloodstream infection

CMS: Centers for Medicare and Medicaid Services

COLO: Colon surgery

FDOH: Florida Department of Health

HAI: Health care-associated infection

HHS: U.S. Department of Health and Human Services

HYST: Abdominal hysterectomy surgery

ICU: Intensive care unit

MRSA: Methicillin-resistant *Staphylococcus aureus*

NHSN: National Healthcare Safety Network

SIR: Standardized infection ratio

SSI: Surgical site infection

UTI: Urinary tract infection

VAE: Ventilator-associated event

EXECUTIVE SUMMARY

Health care-associated infections (HAIs) are infections patients acquire while receiving care for other reasons in a health care setting. These infections threaten patient safety and public health. The impact of HAIs is significant, contributing to increased length of hospitalization, financial burden, and potential death. The Florida Department of Health (FDOH) HAI Prevention Program works closely with local hospitals to track and prevent HAIs. Tracking of HAIs is standardized nationwide using the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN) surveillance system and national surveillance definitions.

For 2023, catheter-associated urinary tract infection (CAUTI) and *Clostridioides difficile* (CDI) standardized infection ratios (SIRs) have met the Department of Health and Human Services (HHS) HAI Action Plan 2020 reduction goals. The SIRs for CAUTI and CDI were 0.48 and 0.29, exceeding the HHS HAI Action Plan 2020 reduction goals of 0.75 and 0.70, respectively.

The SIR for CAUTI decreased from 0.54 to 0.48, representing a 11% decrease from 2022. Four percent of intensive care units (ICUs) in Florida hospitals reporting to NHSN had a CAUTI SIR that was significantly higher than the national SIR (0.49). Two percent of wards in Florida hospitals reporting to NHSN had a CAUTI SIR that was significantly higher than the national SIR (0.73). Three percent of acute care hospitals (ACHs), with enough data to calculate a CAUTI SIR, had an SIR significantly higher than the national SIR (0.62).

Central line-associated bloodstream infections (CLABSI) SIR decreased in 2023 by 20% from an SIR of 0.74 to 0.59. Six percent of Florida hospitals reporting to NHSN had a CLABSI SIR that was significantly higher than the national SIR (0.72). Four percent of ICUs in Florida hospitals reporting to NHSN had a CLABSI SIR that was significantly higher than the national SIR (0.77). Four percent of wards in Florida hospitals reporting to NHSN had a CLABSI SIR that was significantly higher than the national SIR (0.71). Seven percent of neonatal ICUs had a CLABSI SIR that was significantly higher than the national SIR (0.60). About 183 CLABSI events needed to be prevented across the state to achieve the HHS SIR goal.

Surgical site infections (SSIs) for colon surgeries decreased from 0.76 in 2022 to 0.74 in 2023, representing a 3% decrease. SSIs following abdominal hysterectomies had a higher SIR in 2023, increasing from 0.98 in 2022 to 1.11, representing at 13% increase. To reach the HHS SIR goal of 0.70, about 30 SSIs from colon surgeries and 52 SSIs from abdominal

hysterectomies need to be prevented collectively among all Florida hospitals. Methicillin-resistant *Staphylococcus aureus* (MRSA) SIR decreased from 0.94 to 0.78; representing a 17% decrease from 2022. To reach the HHS reduction SIR goal of 0.50, approximately 240 MRSA laboratory-identified (LabID) events needed to be prevented across the state.

None of the Centers for Medicare and Medicaid Services (CMS) reportable HAIs had a significant increase from 2022 to 2023.

Ventilator-associated events (VAEs) had an SIR decrease in 2023 from 1.64 to 1.52, representing a 7% decrease from 2022. Thirty-six percent of Florida hospitals reporting to NHSN had a VAE SIR that was significantly higher than the national SIR (1.13). Thirty-nine percent of ICUs in Florida hospitals reporting to NHSN had a VAE SIR that was significantly higher than the national SIR (1.14). Twenty-four percent of wards in Florida hospitals reporting to NHSN had a VAE SIR that was significantly higher than the national SIR (1.06). VAE is not an HAI that is required to be reported to CMS for quality improvement programs, nor does it have an associated HHS HAI Action Plan 2020 reduction goal.

2023 FL HAI	Less Than or Equal to NHSN Baseline SIR 1.0	Less Than or Equal to National Average SIR	Less Than or Equal to 2020 HHS SIR Target Goal
CLABSI	✓	✓	✗
CAUTI	✓	✓	✓
CDI	✓	✓	✓
MRSA	✓	✗	✗
SSI-COLO	✓	✓	✗
SSI-HYST	✗	✗	✗
VAE*	✗	✗	

Not required by CMS and no HHS Target SIR Goal.

HAI prevalence between hospitals depends on several factors, including infection prevention practices or policies, patient risk factors, and underlying conditions. Although Florida has only

reached two of the six HHS SIR target goals, the remaining HAIs have cumulative attributable differences (CADs) that are achievable for 2024. Continued partnerships with local health departments, health care associations, and ACHs drive HAI reduction initiatives. Sharing statewide data promotes patient safety and best practices in clinical settings. Continued vigilance in surveillance and education in infection control practices is essential to improving patient safety and outcomes.

INTRODUCTION
BACKGROUND

Time spent in the hospital, or undergoing medical procedures, increases patients' risk of HAIs. However, these infections are not limited to hospitals. Patients visiting outpatient clinics, dialysis centers, and long-term care facilities are also at risk (Centers for Disease Control and Prevention [CDC], n.d.). These infections can cause serious illness and death, many of which are preventable. On any given day, about 1 in 31 hospital patients have at least one HAI (CDC, 2024)

Hospitals are required to self-report their HAI data using a free, web-based software system called NHSN. FDOH provides support to hospital staff on the appropriate use of the system and guidance to track infections using a standardized surveillance methodology. For more information about NHSN, please visit cdc.gov/nhsn/index.html.

This report covers Florida acute care hospital data for 2023. The data were downloaded from the current HAI Progress Report (cdc.gov/nhsn/datastat/progress-report.html) and from archived annual reports (2020, 2021, 2022, and 2023). Any changes made to the data after the publishing of the progress report are not reflected in this report.

REPORT AUDIENCE

The FDOH HAI Prevention Program produces this report for consumers, health care providers, public health officials, and Florida policymakers. The data can drive health care facility prevention strategies, awareness of the burden of HAIs within the community, and policy support for HAI prevention and surveillance.

REPORTING REQUIREMENTS

Currently, HAIs are not included on the list of reportable diseases or conditions required to be reported by practitioners in Florida. Hospitals that participate in CMS Quality Reporting programs are required to report certain HAIs to NHSN. For more information on CMS reporting requirements, please visit cdc.gov/nhsn/cms/.

NATIONAL TARGETS

In 2015, new baselines of all the HAIs reported to NHSN for comparing HAI data were released. Updates were made to the source of aggregate data from national HAI data, and the risk adjustment method used for the original baselines. Risk adjustment is the process used to account for the differences in risk that may impact the number of infections reported by a hospital, such as location type, hospital bed size, and patient age. Hospital performance is compared using risk-adjusted data with a measure called the SIR, discussed in more detail in the methods section. For more information about the updated NHSN baseline, please visit cdc.gov/nhsn/2015rebaseline/index.html.

In 2023, Florida ACHs continued to make substantial improvements in HAI prevention efforts (Figure 1). The statewide SIR for CAUTIs, CLABSIs, CDIs, and MRSA, SSIs following colon surgeries (SSI-COLO) are lower than the national baseline. VAEs are not required reportable conditions for CMS; however, Florida monitors VAEs due to continuously elevated SIRs over the past few years.

A second standard of improvement is the 2020 U.S. HHS SIR target for the National Action Plan to Prevent Health Care-Associated Infections: Road Map to Elimination (HAI Action Plan)(hhs.gov/oidp/topics/health-care-associated-infections/targets-metrics/index.html) Only CAUTI and CDI in Florida have met the 2020 HHS target.

Figure 1. Health Care-Associated Infections SIRs in Florida Hospitals, 2020–2023
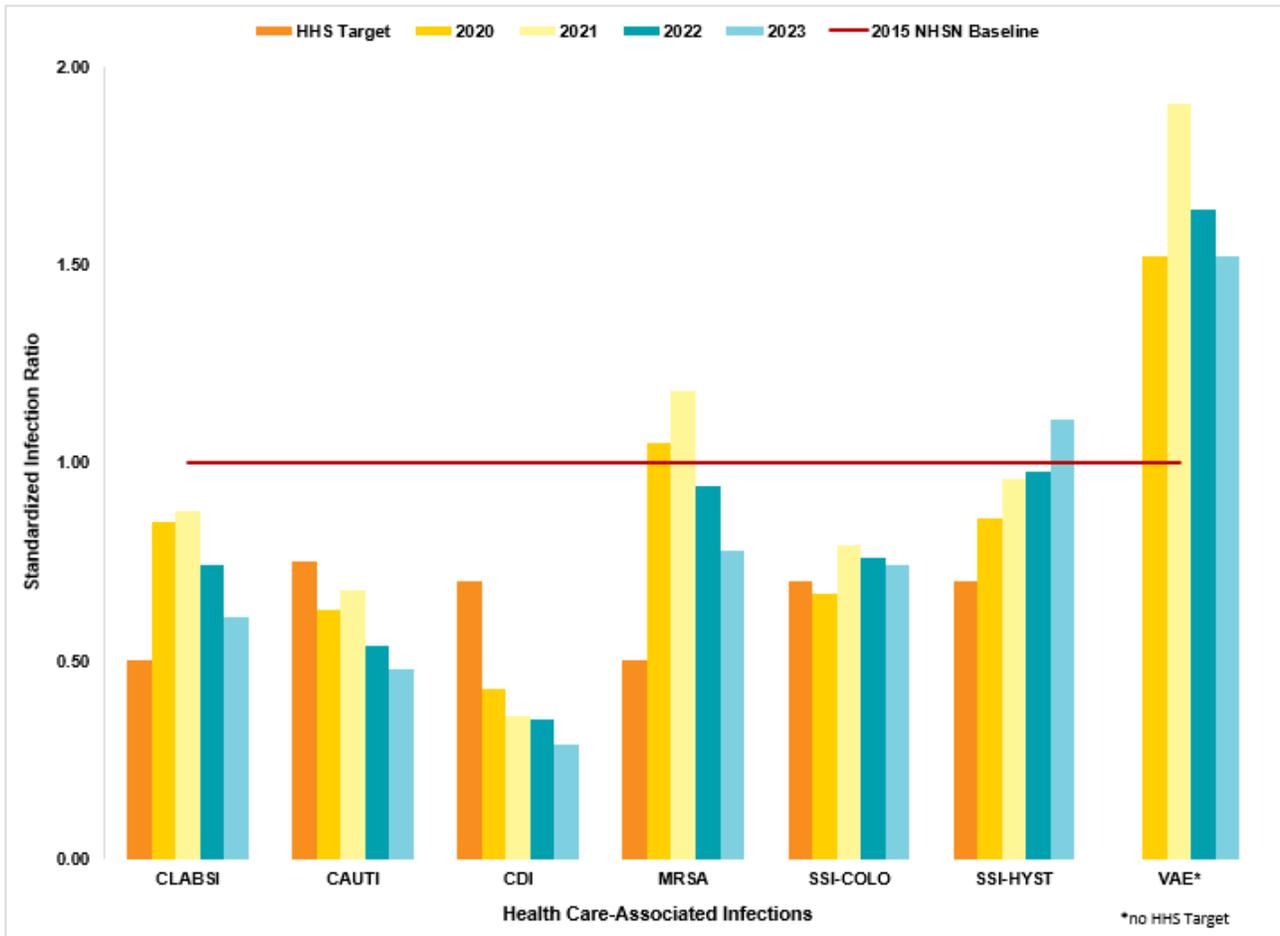
METHODS

The FDOH HAI Prevention Program has established a data use agreement that allows FDOH to use NHSN to retrieve and report on data submitted by hospitals. The SIR tables following each HAI section list SIRs for acute care hospitals.

For 2023, FDOH tracked six types of HAIs:

- CLABSI
- CAUTI
- CDI
- MRSA
- VAE
- SSI (abdominal hysterectomies and colon surgeries)

STANDARDIZED INFECTION RATIO

The SIR is a summary measure used to track HAIs over time and can be calculated on multiple population levels including unit, facility, state, and nation. The data adjust for differences between health care facilities such as patients, procedures with higher risk of infection, and facility size. SIR compares the number of infections *reported* to the number of infections that were *predicted* using data from the 2015 baseline, which varies for each infection type. Lower SIRs indicate better performance. For more information on SIR, please visit cdc.gov/nhsn/2022rebaseline/sir-guide.pdf.

SIR compares the observed number of infections that occurred given a hospital's number of device days, procedures, or patient (denominator) days with national baseline data. National data are provided as a metric for comparison and include all hospitals that report data into the NHSN system. SIR is not calculated when the number of predicted infections is less than 1.0. According to national baseline data, if the number of predicted infections is less than 1.0, the risk to patients is so low that not even one type of event (or infection) is predicted to occur in that group of patients. For reporting purposes, SIR can be assumed as zero if it was not calculated.

HAI Infection	Denominator
CLABSI	Total device (central line) days
CAUTI	Total device (catheter) days
CDI	Total patient days
MRSA	Total patient days
VAE	Total device (ventilator) days
SSI	Total procedures

$$SIR = \frac{Observed\ \#\ of\ HAIs}{Predicted\ \#\ of\ HAIs}$$

When the SIR is calculated, there are three possible results:

• SIR is less than 1.0 (**better**) — This indicates there were fewer infections reported during the surveillance period than would have been predicted given the baseline data.

• SIR is equal to 1.0 (**same**) — As in any ratio, the nominal value of 1 indicates the numerator and denominator are equal. In this case, the number of infections reported during the surveillance period is the same as the number of infections predicted given the baseline data.

• SIR is greater than 1.0 (**worse**) — This indicates there were more infections reported during the surveillance period than would have been predicted given the baseline data.

Cumulative Attributable Difference

Cumulative Attributable Difference (CAD) is the number of infections that must be prevented within a group, facility, or unit to achieve an HAI reduction goal. CAD is calculated by subtracting a numerical prevention target from an observed number of HAIs. The prevention target is the product of the predicted number of HAIs and an SIR goal.

CAD is used as a prioritization metric to identify the areas with the highest burden of excess infections. Targeting these locations will yield the largest impact on HAI prevention. CAD is influenced by exposure size; a larger hospital with many patient days will likely have a higher CAD than a smaller hospital would. CAD should not be used as a metric to compare performance of units or facilities. For more information on CAD and the Targeted Assessment for Prevention Strategy, please visit cdc.gov/healthcare-associated-infections/php/toolkit/tap-strategy.html

$$CAD = \frac{\text{Observed}}{\text{\# of HAIs}} - \frac{\text{Predicted \# of}}{\text{HAIs(SIRgoal)}}$$

CATHETER-ASSOCIATED URINARY TRACT INFECTIONS
A urinary tract infection (UTI) is an infection involving any part of the urinary system, including urethra, bladder, ureters, and kidneys. UTIs are the most common type of HAI reported to the National Healthcare Safety Network (cdc.gov/nhsn/index.html). Among UTIs acquired in the hospital, approximately 75% are associated with a urinary catheter, which is a tube inserted into the bladder through the urethra to drain urine. Between 15-25% of hospitalized patients receive urinary catheters during their hospital stay. The most important risk factor for developing a CAUTI is prolonged use of the urinary catheter. Therefore, catheters should only be used for appropriate indications and should be removed as soon as they are no longer needed. Hospitals following CMS guidelines are required to report their infections to NHSN. Table 1 shows the SIR for the state, with aggregated NHSN data, compared to the national CAUTI SIR. The symbol in

the performance column describes the state's SIR compared to the national SIRs for CAUTI in the specified acute care locations. The 2023 SIR for CAUTI in all acute care locations is 0.48. Between 2022 and 2023, the state SIR for CAUTI decreased significantly by 11% ($p < 0.05$). Visit cdc.gov/uti/about/cauti-basics.html for more information.

Table 1. State Summary - CAUTI Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▼	939	1,957.57	0.48	0.45, 0.51
Critical Care Locations (State)	▼	324	938.31	0.35	0.31, 0.38
Non- Critical Care Locations (State)	▼	615	1,019.26	0.60	0.56, 0.65
All Locations (National)	Reference	17,370	27,992.92	0.62	0.61, 0.63
Critical Care Locations (National)	Reference	6,191	12,680.17	0.49	0.48, 0.50
Non- Critical Care Locations (National)	Reference	11,179	15,312.76	0.73	0.72, 0.74

▼	Statistically **fewer (better)** infections
▼	Fewer infections (not statistically significant)
▲	More infections (not statistically significant)
▲	Statistically **more (worse)** infections

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS (CLABSI)

A central line (or central venous catheter) is a flexible tube that is inserted into a large vein in the neck, chest, arm, or groin to access a patient's bloodstream, with a tip that ends near the heart. Central lines allow clinicians to administer medications and fluids, draw blood for laboratory testing, and hemodynamic monitoring. Central lines are typically kept in place longer than a regular intravenous (IV) catheter.

CLABSIs are serious infections that occur if pathogens (usually bacteria or viruses) enter the bloodstream through a central line. CLABSIs typically cause prolonged hospitalization, increased costs, and risk of mortality. Hospital CLABSI SIRs are compared by the type of hospital unit, based on the type of patient care required.

Florida hospitals have been required to report all adult and neonatal ICU-acquired CLABSIs to NHSN for participation in CMS quality improvement programs. Table 2 shows the SIR for the state, with aggregated NHSN data, compared to national CLABSI SIR. The symbol in the performance column describes the state's SIR compared to the national SIRs for CLABSI in the specified acute care locations.

The 2023 SIR for CLABSI in all acute care locations was 0.59. Between 2022 and 2023, the state SIR for CLABSI decreased significantly by 20% ($p < 0.05$). Visit cdc.gov/clabsi/about/?CDC_AAref_Val= for more information.

Table 2. State Summary - CLABSI Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▼	1,199	2,031.59	0.59	0.56, 0.62
Critical Care Locations (State)	▼	424	723.70	0.59	0.53, 0.64
Non- Critical Care Locations (State)	▼	702	1,156.59	0.61	0.56, 0.65
Neonatal ICUs (State)	▼	73	151.30	0.48	0.38, 0.60
All Locations (National)	**Reference**	20,032	27,649.95	0.72	0.71, 0.74
Critical Care Locations (National)	**Reference**	7,382	9,598.62	0.77	0.75, 0.79
Non- Critical Care Locations (National)	**Reference**	11,525	16,180.00	0.71	0.70, 0.73
Neonatal ICUs (National)	**Reference**	1,125	1,871.33	0.60	0.57, 0.64

▼	Statistically **fewer (better)** infections
▼	Fewer infections (not statistically significant)
▲	More infections (not statistically significant)
▲	Statistically **more (worse)** infections

CLOSTRIDIOIDES DIFFICILE (C. diff OR CDI) LAB-ID INFECTIONS

Clostridioides difficile (formerly *Clostridium difficile*), also known as CDI, *C. difficile* or *C. diff*, is a bacterium that can cause severe diarrhea, colitis, sepsis, and death. Most cases of CDI occur in people who are or who have been taking antibiotics, clearing the way for *C. difficile* to colonize in the gastrointestinal tract. Other risk factors include a recent stay in a hospital or nursing home, weakened immune system, being at least 65 years old, and having a previous infection.

C. difficile infection can spread from person to person on contaminated equipment or the hands of health care providers and visitors. Since the spore-forming bacteria can persist in the environment, and resist some methods of cleaning and disinfection, *C. difficile* poses an infection prevention challenge in health care settings.

Florida ACHs are required to report hospital onset of *C. difficile* infections, identified by a laboratory test, for participation in CMS quality improvement programs. Table 3 shows the SIR for the state, with aggregated NHSN data, compared to national CDI SIR. The symbol in the performance column describes the state's SIR compared to the national SIRs for CDI in the specified acute-care locations.

The 2023 SIR for CDI events is 0.29. Between 2022 and 2023, the state SIR for CDI events decreased significantly by 17% (p<0.05). Visit cdc.gov/c-diff/ for more information.

Table 3. State Summary - CDI Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▼	2,091	7,250.05	0.29	0.27, 0.30
All Locations (National)	**Reference**	35,840	85,371.85	0.42	0.42, 0.42
▼		Statistically **fewer (better)** infections			
▼		Fewer infections (not statistically significant)			
▲		More infections (not statistically significant)			
▲		Statistically **more (worse)** infections			

METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS*

Staphylococcus aureus (SA) are bacteria commonly found on the skin. Although these bacteria are generally harmless, they can cause infections ranging from skin sores to serious infections of internal organs. Most SA infections are minor and do not require treatment with antibiotics. However, more severe SA infections often require treatment with antibiotics. MRSA is a strain of SA that has become resistant to certain antibiotics, such as methicillin.

When MRSA is contracted in the health care setting, severe problems can manifest, such as bacteremia (bloodstream infections), pneumonia, and SSIs. If not properly treated, MRSA infections can result in sepsis or death.

Florida hospitals following CMS guidelines are required to report MRSA infections to NHSN. Table 4 shows the SIR for the state, with aggregated NHSN data, compared to national MRSA SIR. The symbol in the performance column describes the state's SIR compared to the national SIRs for MRSA for facility-wide inpatients.

The 2023 SIR for MRSA bacteremia events is 0.78. Between 2022 and 2023, the state SIR for MRSA decreased significantly by 17% ($p < 0.05$). Visit cdc.gov/mrsa/hcp/clinical-overview/ for more information.

Table 4. State Summary - MRSA Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▼	688	855.56	0.78	0.72, 0.84
All Locations (National)	**Reference**	8,107	10,738.48	0.76	0.74, 0.77

▼	Statistically **fewer (better)** infections
▼	Fewer infections (not statistically significant)
▲	More infections (not statistically significant)
▲	Statistically **more (worse)** infections

VENTILATOR-ASSOCIATED EVENTS

A ventilator is a machine that is used to help a patient breathe by giving oxygen through a tube placed in a patient's mouth or nose, or through a hole in the front of the neck. Mechanical ventilation is an essential, life-saving therapy for patients with critical illness and respiratory failure. Patients who need a ventilator are at increased risk for complications, such as ventilator-associated pneumonia, sepsis, and acute respiratory distress. Complications can lead to longer duration of mechanical ventilation, longer stays in the ICU and hospital, increased health care costs, and increased risk of disability and death.

VAEs are identified by using a combination of objective criteria, deterioration in respiratory status after a period of stability or improvement on the ventilator, evidence of infection or inflammation, and laboratory evidence of respiratory infection.

VAEs are not required HAIs for reporting to CMS quality improvement programs, but FDOH monitors VAEs due to the increase in SIR over the past few years. Table 5 shows the SIR for the state, with aggregated NHSN data, compared to national VAE SIR. The symbol in the performance column describes the state's SIR compared to the national SIRs for VAE for facility-wide inpatients.

The 2023 SIR for VAE is 1.52. Between 2022 and 2023, the state SIR for MRSA decreased significantly by 7% ($p < 0.05$). Visit cdc.gov/ventilator-associated-pneumonia/about for more information.

Table 5. State Summary - VAE Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▼	3,231	2,123.21	1.52	1.47, 1.58
Critical Care Locations (State)	▼	2,926	1,941.94	1.51	1.45, 1.56
Non- Critical Care Locations (State)	▲	305	181.27	1.68	1.50, 1.88
All Locations (National)	**Reference**	27,626	24,426.46	1.13	1.12, 1.14
Critical Care Locations (National)	**Reference**	26,351	23,218.36	1.14	1.12, 1.15
Non- Critical Care Locations (National)	**Reference**	1,275	1,208.10	1.06	1.00, 1.12

▼	Statistically **fewer (better)** infections
▼	Fewer infections (not statistically significant)
▲	More infections (not statistically significant)
▲	Statistically **more (worse)** infections

SURGICAL SITE INFECTIONS

Surgical site infection (SSI) occurs after a surgery was performed. Most surgeries do not result in an infection. However, there is a risk of SSI following any surgery. SSI reporting focuses on certain types of surgeries because they are performed frequently or may have higher risk of infection. Hospital SSI rates are compared by the type of surgical procedure.

SSIs occur in 2-5% of patients undergoing inpatient surgery. These infections can spread in superficial skin layers, deep incisional layers (fascial and muscle), and into the organ space areas.

Nationally, two SSI types are reported by all, or most, ACHs in most states: abdominal hysterectomy and colon surgery infections.

COLON SURGERIES

Colon (large intestine or bowel) surgeries involve a surgical incision to access the intestinal cavity to make a repair on, or remove, part of the large intestine. Some colon repairs include removal of diseased or damaged colon (resection), attaching healthy parts of the colon together (anastomosis), or making an opening in the colon to remove waste (ostomy).

SSI from colon surgeries can affect the tissue around the incision and cause a superficial infection (e.g., skin and subcutaneous tissue), or a deep infection in the muscles, connective tissues, or organs such as the gastrointestinal tract or in the intra-abdominal area.

Rectal operations, small bowel surgeries, gallbladder or appendix removal, and non-surgical routine tests like colonoscopies are considered different types of procedures and are not included in this NHSN colon surgery category.

The 2023 SIR for SSIs from colon surgeries is 0.74. Between 2022 and 2023, the state SIR for SSIs related to colon surgeries decreased by 3%. However, this was not a significant decrease (p>0.05).

ABDOMINAL HYSTERECTOMIES

An abdominal hysterectomy is a common surgical procedure in which the uterus is removed through an incision in the lower abdomen. SSIs from hysterectomies can affect the area around the incision. This is a superficial infection, as the area affected is limited to the skin and subcutaneous tissue. Other, more serious SSIs can result in a deep infection in the muscles or an infection affecting the reproductive tract in the area around the abdomen. Vaginal hysterectomies are not included in this NHSN abdominal hysterectomy surgery category.

The 2023 SIR for SSIs from abdominal hysterectomies is 1.11. Between 2022 and 2023, the state SIR for SSIs related to abdominal hysterectomies increased by 13%. However, this increase is not statistically significant (p>0.05).

Tables 6 and 7 show the SIR for the state, with aggregated NHSN data, compared to national SSI-COLO and SSI-HYST SIR. Visit cdc.gov/surgical-site-infections/about for more information.

Table 6. State Summary - SSI-COLO Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▼	495	670.06	0.74	0.68, 0.81
All Locations (National)	**Reference**	7,789	8,858.81	0.88	0.86, 0.90

Table 7. State Summary - SSI-HYST Standardized Infection Ratios, 2023

Acute Care Facility Location	Performance	Number of Infections	Number Predicted	SIR	Confidence Interval (95%)
All Locations (State)	▲	141	127.41	1.11	0.94, 1.30
All Locations (National)	**Reference**	1,846	1,790.61	1.03	0.99, 1.08

▼	Statistically **fewer (better)** infections
▼	Fewer infections (not statistically significant)
▲	More infections (not statistically significant)
▲	Statistically **more (worse)** infections

ACKNOWLEDGEMENTS

REFERENCES

Centers for Disease Control and Prevention. (2024). *HAIs: Reports and Data*. Centers for Disease Control and Prevention. https://www.cdc.gov/healthcare-associated-infections/php/data/?CDC_AAref_Val=https%3A%2F%2Fwww.cdc.gov%2Fhai%2Fdata%2Findex.html

Centers for Disease Control and Prevention. (n.d.). *Healthcare-associated infections (HAIS)*. Centers for Disease Control and Prevention. https://www.cdc.gov/healthcare-associated-infections/index.html